1: Conzemius M-4, 5 (1921) 1932
SA15 Mosquito SA15

DIVISION OF LABOR

DOMESTIC WORK.—Such domestic industries as spinning, weaving, and the manufacture of pottery, bark cloth, and bead ornaments are female occupations. Tailoring is, however, frequently in the hands of the men, some of whom even make the clothes for their wives. The preparation of food is strictly reserved to the women, the men never condescending to do any cooking, except while away from home. The barbecuing of the chase is, however, the work of the men. 462

FIELDS.—The husband prepares a patch of the forest for the making of a plantation, by cutting down the trees and cleaning the ground by burning; but the care of the field, that is the planting, weeding, and reaping of the crop, is left to the women.

OTHER OUTSIDE OCCUPATIONS.—The manufacture of fishing and hunting implements, and of canoes and accessories thereto, are man's work. The women fish with the hook, but all other methods of fishing are reserved to the men. The latter fell trees for firewood and cut them into convenient lengths to haul, but the females have to fetch and split it. The woman goes to the waterside to bring the game which her husband has killed and brought in his canoe, but she never accompanies him on the actual hunt, being unacquainted with the handling of hunting weapons.

LOAD CARRYING.—The carrying of heavy loads is usually left to the women. For this purpose they use a carrying strap, known by the local Spanish name "bombador" or "bambador." The latter consists of a narrow strip of bark cloth, both extremities of which are attached to the burden. The load is first lifted on the back with the assistance of another person and then the pack strap is put around the forehead. The male Indians do not carry anything in this manner, but they secure the package to the back with the aid of shoulder straps, as do the Ladinos. The Spanish-speaking women, however, carry loads generally upon the head, as is the case with the negroes of both sexes. When very tired the Indians give a sort of whistle to catch their breath (M.: *wiñka puhbaya;* T. & P.: *wiñka wupdanin;* U.: *wiñka wupdanaka*, lit.: "to blow the breath"). 462 482

DAY LABOR WORK.—In former days many young Miskito, living to the west of Cabo Gracias a Dios, went annually to British Honduras to work there in the mahogany or logwood camps. They left about May and returned in November or December. During this time the settlements on the coast were practically without male inhabitants, except for the boys and old men. The women then had to subsist on fish, crabs, oysters, cockles, the eggs of alligators, turtles, and iguanas, and vegetable food. Now all these Indians easily find work in their own country, either in the mahogany camps or in the 464 [484] [262]

1: Conzemius M-4, 5 (1921) 1932
SA15 Mosquito SA15

226 At night torchlights are used to attract the fish and induce them to rise to the surface, where they are killed by a stroke with the machete; the latter weapon is also used to chop the "sleeping" fishes, which are easily detected with the torches.

Along the river banks and among the rocks the Indians also "feel" for certain fishes and for crustacea.

[262] 225 CATCHING ALLIGATORS.—The tail part of young alligators and crocodiles is also occasionally eaten. These ugly reptiles are caught with the aid of large hooks. Young (61) gives the following account of the manner practiced by the Sumu to catch these repulsive creatures but, needless to say, this applies only to young specimens: "A Sumu Indian, when he sees an alligator near the banks of the river, will boldly swim under water, carrying a native-manufactured rope with a noose in it, until he reaches the creature; he will then dexterously affix the noose to its leg; his companions at the same moment, having hold of the other end of the rope, pull it vigorously, and the alligator is speedily drawn out and despatched."

226 CRUSTACEA AND MOLLUSKS.—Lobsters, crabs, and mollusks (conchs, large whelks, mussels, oysters) are also gathered by the women, and form an important item of food. In the larger lagoons two kinds of edible oysters are common; the smaller one, or mangrove oyster, attaches itself to the roots of the mangrove tree, while the larger one occurs in banks in certain parts of the lagoons.

172 A small bivalve mollusk, known locally as "cockle" (M. and S.: *āhi*), appears to have played in former days an enormous rôle in the food supply. A number of refuse heaps, up to 20 feet in height, consisting of cockle shells intermingled with fragments of domestic utensils of stone, bone, or pottery, have been discovered on the western shore of Bluefields Lagoon. Two of such *tumuli* were examined by the writer on Cucra Point in 1921. They consisted nearly exclusively of the above-mentioned small cockle shell, which mollusk is found in the shallow water of the lagoon. Oyster shells were rare, although extensive oyster banks exist also in certain parts of the Bluefields Lagoon. These shell mounds (shell heaps, kitchen middens, kitchen débris), called also by the Danish word *kjøkkenmødding*, indicate undoubtedly old dwelling sites; from their great size it is evident that long periods of time must have been required for their accumulation. A number of them were also found at the site of Bluefields and likewise a little to the north; they have been carried away to "metal" the streets of that town. See also Bell (a: 260; b: 18), Wickham (b: 251–252), and Spinden (532–533).

226 777 FISHING CHARMS.—Certain charms are said to be very efficacious at fishing. Stones found in the stomach of fishes are highly valued, as their possessor will have good luck in catching that particular species of fish. Heads and spines from the larger species are also

1: Conzemius M-4, 5 (1921) 1932
SA15 Mosquito SA15

CULINARY ARTS: METHODS OF FOOD PREPARATION

262 These Indians obtain their food from agriculture, hunting, fishing, and by gathering the wild fruits of the forest. Among the Miskito living near the coast the staple food is sweet cassava, but in the other regions of the country its place is occupied by bananas; among the Sumu maize also plays a great rôle.

252 While at home the men never do any cooking and would consider such an act beneath their dignity, but after the return from the chase they barbecue the meat which is not to be consumed immediately.

261 The Indian has an enormous appetite when there is plenty of food, especially fish and meat, at hand; on the other hand, in case of food shortage, they are able to travel and work with scarcely anything to eat.

264 SERVING OF THE MEAL.—No regularity is observed in eating, but food may be taken at any time. When the meal is ready the grown-up men are served first in their hammocks with the best and largest shares. A calabash of broth or soup (M.: *pilali;* S.: *di waeni, di waska*) and a bijagua leaf containing salt is also taken to them. The women and children eat together; they sit on the ground, forming a circle around the remainder of the food, which is spread upon a layer of large leaves. There is, as a rule, little left when the men have been served, but the women and children have taken their share previously. While the pot is boiling they crowd around the fire, and keep on eating little bits of meat together with plantains or bananas roasted in the hot ashes. The Indians do not speak much during meals; a visitor is never questioned while he is eating, as that would be a breach of etiquette.

262 [252] ANIMAL FOOD.—Meat and fish are either boiled with water or roasted in the hot ashes. The meat is obtained from the chase; the Miskito living on the edge of the savannas also own cattle which they slaughter for meat. Other domestic animals, as pigs and fowls, are seldom eaten, but are commonly sold to strangers; this is also the case with fowl eggs. The Indians, as a rule, do not care much for the flesh and products of animals of foreign origin. Certain indigenous animals are taboo. The favorite meat of both tribes is the red monkey (*Ateles* sp.) and the white-lipped peccary (*Tayassu* sp.).

262 252 The Sumu sometimes eat frogs (M.: *burka;* S.: *burka, burki*), removing their skin first in the hot ashes; to the Miskito this amphibian is taboo. Birds' eggs are eaten, even when they are practically rotten, but the eggs of the domestic fowls are not esteemed. The winged females of the leaf-carrying ants (*Atta cephalotes* syn. *Oecodoma cephalotes;* M.: *wiwi;* S.: *isdaŭ*) are also caught when

1: Conzemius M-4, 5 (1921) 1932
SA15 Mosquito SA15

seeking new colonies; their abdomen is roasted and eaten by both tribes.

Small fish is wrapped in bijagua leaves and roasted in the hot ashes. This procedure is the usual one while away from home when there is no cooking pot at hand. Fish prepared in this manner has an exquisite taste, for all the savor is preserved. Such a leaf parcel is called *kakati* by the Miskito and *wiwana* by the Sumu. The Miskito living near the sea also fry fish in coconut oil. The latter is obtained by grating the nut and boiling the milk until the oil rises to the top, when it is skimmed off.

ANTHROPOPHAGY.—It is very probable that in former days slaves captured from the enemy tribes were occasionally an article of diet among Miskito and Sumu. There is no lack of [illegible] that cannibalism existed among the Sumu. It was reported [illegible] Columbus in 1502 from the region between Cabo Honduras and Cabo Gracias a Dios. In 1612 the Twahka killed and devoured a party of Spaniards (Conzemius, b: 27). Later, during the second half of the seventeenth century, a buccaneer was roasted and eaten by the Kukra of Corn Islands (Exquemelin, Engl. ed.: 114). A Spanish document from 1739 or 1740 states that the Tuñla Indians used to capture Christians in order to fatten and then eat them.[85] M. W. (305) tells us that the Ulwa first drew out the finger and toe nails of their unhappy victims, while the latter were still alive, and knocked out their teeth with stones. Then they roasted them over a framework of green sticks. They considered this food the best of all.

Cannibalism was, however, probably a ceremonial custom, a ritual of vengeance. The body of the enemy was mutilated and cut to pieces, in order to destroy him entirely. The hair, teeth, and nails were extracted and carried as necklaces, as particularly magical virtues were attributed to these body parts. To eat an enemy was indeed considered the most profound of all insults, for by such an act he would be destroyed, not only for this world, but also for the hereafter.

PRESERVING MEAT AND FISH.—After a successful chase the meat which is to be preserved for some time is placed on a low stage or framework (M.: *trin;* S.: *palá, lim*) of green sticks, and slowly barbecued by the action of a fire lighted underneath, assisted by the rays of the tropical sun. No salt is added to it. From time to time it is turned. This fire is kept up for several days, after which the meat becomes nearly as dry as our smoked beef.

[85] Noticias estadísticas del Reino de Guatemala, Guatemala, vol. II, No. 32, Oct. 10, 1867.

1: Conzemius M-4, 5 (1921) 1932
SA15 Mosquito SA15

Fish may also be preserved by drying it in the sun, after having cleaned it and rubbed salt into the scraped flanks.

VEGETABLE FOOD.—Vegetables, such as cassava, sweet potatoes, tania, yams, green bananas, and plantains, are either boiled in water or (occasionally in coconut milk) with meat or fish, or they are roasted in the hot ashes. Cassava prepared by the last-named process is called *bulbul* by the Miskito.

The fruit of the pejivalle palm is also boiled in water, after which the skin is easily removed. Inferior varieties of this fruit are generally mashed and consumed in the shape of a beverage, either soured or fermented.

A sort of bread (M.: *tani;* S.: *dipis*) is also made. Dry maize is ground on the metate with the addition of a little water. It is then wrapped in large bijagua leaves after the manner of the "tamales" of the Ladinos. A few days later when this mass has turned sour it is baked in the embers. The Sumu also bake it occasionally, immediately after grinding the maize, without allowing it to turn sour; it is then known to them by the name *pan* (from the Spanish "pan"). The Ulwa make this bread generally from unripe maize.

The pith or "cabbage" of various palms (*Attalea, Chamaedorea, Euterpe, Iriartea, Oreodoxa*) may be eaten either pickled or cooked; it is slightly bitter in taste. The pith and the small acid fruits of the pingwing or piñuela (*Bromelia pinguin* L.; M.: *ahsi;* S.: *ahsi, wakari*) are also esteemed. In times of scarcity the tender young bamboo shoots are also cooked and eaten.

The leaves of a small wild-growing plant, called cucumber or calaloo (*Phytolacca decandra* L.), are occasionally eaten as "spinach" by the Indians, who have taken this habit from the Creoles and Negroes. The common name "calaloo" for this plant savors of African origin; the Miskito call it *tilba pata* "tapir food." Indians and Ladinos use the leaves sometimes as soap, hence the local Spanish name "jaboncillo."

WILD FRUITS.—The Indians also collect the fruits of a number of wild-growing trees, of which the following are the most important for food: Hog plums (*Spondias lutea* L.; M.: *pahara;* S.: *walak*), nances or nancitos (*Byrsonima crassifolia* H. B. K.; M. and S.: *krabo, karabo*), zapotes or mammee apples (*Lucuma mammosa* Gaertn.; M.: *kuri;* S.: *sipul*), sapodillas or naseberries (*Sapota zapotilla* Coville; M.: *iban;* S.: *iban, sabakan*), guapinol or locust tree (*Hymenaea courbaril* L.; M.: *lāua, laka;* S.: *tipi*), several species of dwarf guavas (*Psidium* sp.; M.: *kru;* S.: *kuru, arayañ*), breadnut tree (*Helicostylis ojoche* K. Sch.; M. and S.: *pisba, tisba*), monkey apple (*Moquilea platypus* Hemsl.; M.: *puramāira;* S.: *lasat*), beach or sea grape (*Coccoloba uvifera* L.; M. and S.: *waham*), icaco or coco plum (*Chrysobalanus icaco* L.; M. and S.: *tawa*) and several species of granadillas or fruits of passion

2: Kirchhoff E-4 (no date) 1948
SA15 Mosquito SA15

Maize is believed to be unimportant except in the higher lands, e.g., among the *Ulva*. The *Jicaque* grow it as a commercial crop but do not use it extensively as food. Pineapples are important to the *Paya*. Chili peppers and opuntia, the latter used for raising cochineal, a dye-producing insect, appear to be recent introductions. Plants introduced by the Europeans vary in importance, but plantain is now one of the most basic foods of the region. Quantities of wild foods of all kinds form an important part of the diet.

Hunting.—The bow and arrow was once important to many tribes but has been partially or wholly replaced by the gun. The bow has not been reported from the Corn Islands. Spears or javelins were formerly used for hunting. Slings, traps, and snares were used prinicipally for birds. For the blowgun, see page 224.

List of Foods Grown by the People in the Caribbean Lowlands:

American origin:
- Sweet manioc.
- Bitter manioc.
- Maize.
- Pejivalle (pejibaye) palm.
- Sweetpotato.
- Eddoe (tania).
- Gourd.
- Pumpkin.
- Squash.
- Chayote.
- Tomato.
- Bean (red and black).
- Pineapple.
- Tobacco.
- Cotton.
- Achiote (*Bixa orellana*).
- Cacao.
- Pataste.
- Papaya.
- Avocado.
- Guava.
- Chirimoya.
- Zapote.
- Coconut.
- Usi.
- Ficus.
- Yam.
- Opuntia.
- Peanuts.

Foreign Origin:
- Rice.
- Sugarcane.
- Coffee.
- Mango.
- Breadfruit.
- Tamarind.
- Citrus fruits.
- Plantain.
- Banana.

Hunting is exclusively a male occupation. Communal hunts lasting several days and hunting by torchlight have been reported. Dogs are used frequently to chase the game. Hunters may imitate the calls of animals, sometimes using bone whistles.

Fishing.—Women fish with hooks, which were originally made of bone. Men fish in groups of varying sizes. Fish are shot with the bow and arrow, speared with single- or multipronged spears, taken with traps of various types, or frightened so that they jump into canoes. Torches are used at night to attract the fish. Fish are poisoned by parties of men. Women and men whose wives are pregnant or menstruating cannot join such expeditions (*Jicaque*). Rotenone-bearing plants are crushed in the water above a weir from which the stupefied fish are removed.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

In recent times important contributions with regard to the Miskito 114
Indians have been made by H. J. Spinden,[25] A. H. Schultz,[26] D. E. Harrower[27] and the exhaustive investigations of E. Conzemius.[28]

THE TROPICAL SITUATION

The status of peoples living in the tropics and semi-tropical regions 262
varies considerably, depending on environment and man's adaptation to his habitat.[29]. Different foods are produced under different conditions. Thus, in the inner jungles and in certain highlands, very little food may be available; along the rivers it may be plentiful, and along the seashore other food sources may manifest themselves. Climate, geography, and socio-economic factors have a direct bearing on food availability and consumption.[30] Food habits naturally follow a similar 262
pattern: the classical tortilla of Mexico and the Middle American coun- 177
tries; the use of manioc in the Amazon area; the dehydrated potato (chuño) of the Andean altiplano, the all too starchy diet which has developed in the Caribbean areas, all have their explanation in the factors typical of each area. Furthermore, when natives come into contact with other cultures, deculturation processes in the dietary pattern often take place.[31] These deculturation processes are not limited to clashes between Indian and white cultures, such as prevail in most of Latin America, but to the adaptation and absorption of dissimilar cultures not of Indian origin, such as in Puerto Rico and the southwestern States of this country, where the Hispanic and the Anglo-Saxon mode of life meet. Procurement of food in industrial areas by low income groups may modify the diet considerably. With this in mind no gene-

[25] Spinden, H. J. The Chorotegan Culture area. XXI[e] Congrès International des Americanistes (529-545) Goteborg, 1925.

[26] Schultz, A. H. Anthropological Studies on Nicaraguan Indians. Amer. Jour. Physical Anthropology, 1926, *9*, 65-80.

[27] Harrower, D. E. Rama, Mosquito and Sumu, of Nicaragua. Museum of American Indian, Heye Foundation. 1925, *2*, 44-48.

[28] Conzemius, E. (see footnotes Nos. 1 and 23), also: Die Rama Indianer von Nicaragua. Zeitschrift fur Ethnologie, 1921, *59*, 291-362 (Berlin); Apuntes sobre algunos Nombres Geográficos Mosquitos en Costa Rica y Panamá. Revista de Costa Rica, 1922, 300-306; Les îles Corn de Nicaragua. La Geographie, 1929, *52*, 346-362 (Paris).

[29] Pijoán, M. Certain Factors involved in the Struggle Against Malnutrition and disease. Univ. of New Mexico Press, 1943. Inter-Americana Monographs.

[30] Eggan, F., and Pijoán, M. Some Problems in the Study of Food and Nutrition. América Indígena. 1943, *3*, 9-23.

[31] Pijoán, M., and Elkin, C. A. Secondary Anemia due to Prolonged and Exclusive Milk Feeding Among Shoshone Indian Infants. Jour. Nutrition, 1944, *27*, 67-75.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

ralization can be directly applied to diets in the tropics: the galaxy of nutritional factors are determined by the local situation and the food habits of the people.

The same can be said of tropical infectious disease. The variety of vectors, their ecological relations to circumstances determined by altitude, rains, swamps, climate and vegetation limit disease entities to special regions even though many diseases occur throughout the world. It must be remembered that to the diseases generally present among people are added those which are peculiar to a new environment and that modifications of a disease can take place. For instance, whooping cough is a serious disease attended with a high mortality rate in Central Nicaragua, whereas scarlet fever produces a mild disease often unrecognized. Whether the host or the organism is responsible for such a condition is not known and the problem of host and parasite interrelationships becomes a complex one.

THE MOSQUITO AREA: THE LOCAL SITUATION

The vast region on the Atlantic side of Nicaragua and Honduras is known by the name of Mosquito coast. It is inhabited buy four different tribes of Indians: The Miskito, the Suma (Sumu), the Paya, and the Rama. In some localities the Miskito, often incorrectly called Mosquito, have a considerable admixture of Negro blood and, for this reason, are in some places called Zamboa. The other three tribes, however, are practically of pure Indian blood. In earlier times, the western region of the Mosquito coast was occupied by the Matagalpa Indians, whose language extended over a large area in Nicaragua and Honduras, but has been extinct for nearly half a century. However, a dialect of its is spoken to this day by the older inhabitants of the Salvadorean villages of Cacaopera and Lislique. Today the Indian languages of the area are somewhat interrelated, especially Matagalpa, Miskito, and Suma; Paya is an unrelated language.

The Miskito and small isolated bands of Suma Indians inhabit the eastern side of Honduras and Nicaragua. They are found from the Río Tinto (lat. 15° 50′ N.) to Río Punta Gorda (Lat. 11° 30′ N.). The villages are located chiefly along the banks of the rivers as far up as the headwaters within the jungle proper. The Suma Indians are found primarily in the interior; they are somewhat uncommunicative, but cooperative. The Miskito are self-sustaining and at times derive additional income from labor with fruit companies, mining enterprises and rubber collecting agencies. Today they play an important part in the wild rubber collection program.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

comparison. The dietary in urban areas of coastal ports is predominantly one of imported and home grown cereal grains, wereas the river Indians consume a greater quantity of meats and fresh fruits. On the basis of the investigation by Roberts[35] it may be presumed that the variation in diet may account for the impairment of growth of coastal Indians. In specific physical anthropology there is sufficient reference elsewhere (vide Schultz[28]).

The Miskito Indians have an abundance of hair growth extending low over the forehead; it is scarce on other parts of the body. The hair is commonly black and very straight, although several Indians were noted who had reddishbrown (a metallic auburn) shade of hair. Gray and white hair rare and beard growth is very scarce. Chest and pubic hair is absent among pure Indians.

Although there are no accurate figures dealing with longevity the impression gained was that once an Indian lived to be over twenty years of age he had good chances for old age. Conzemius[1] in 1922 met a number of Indians who were young children during the volcanic eruption of Coseguina on the bay of Fonseca in 1835. Our survey revealed a number of Indians who remembered missionaries who had been in the territory sixty or seventy years ago. The Indians themselves informed us that many die between the ages of fifty and sixty years of age, with the chief cause of death being the fever (malaria). As will be shown, infectious disease takes a heavy toll of life during infancy and in early senescence. It is to be noted that the situation may change and the death rate in later life may increase. In former days sickly and deformed children were either buried alive or starved to death. Only the strong and healthy were allowed to grow up. Today there is no such control; Indians with deformities will secrete them or bandage the part involved; tolerance to diseased people has increased.

GENERAL CUSTOMS OF THE MISKITO

Today the men wear loose cotton shirts *(prak)* and trousers *(transis)*; the shirt tails are usually not tucked in. The older boys wear a similar garment but commonly among youngsters the dress is chiefly a loin or breech cloth *(palpura)* or nothing at all. Many of the women wear dresses *(prak)* although some of them and the girls wear a piece of cloth *(kwaluntara)* which is wrapped about the hips and extends

[35] Roberts, L. J.; Blair, R.; Lenning, B., and Scott, M. Effect of a milk suplement on the physical status of institutional children: I. Growth in height and weight (pp. 287-300), II. Ossification of the bones of the wrist (pp. 494-509), III. Progress of dental caries (pp. 805-823). Amer. Jour. Dis. Children, 1938, 56.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

The most important fruit plant of the Miskito is the banana *(sikya)*. It is not indigenous to America but was brought by the Spaniards. The banana tree produces one good crop and the new shoots appearing at its base are transplanted for another crop. Of the great variety of bananas and plantains grown by the Indians the most common is the *Gros Michel*. Sweet cassava *(yauhra)* is the staple food for the coastal Miskito and it is also cultivated by those living inland. Eddoes or tanias *(dusiwa)* which are known also by the name "Coco", are cultivated for their edible tubers.

A semiwild yam and sweet potato *(tawa)* is eaten; pumpkins and squashes are also grown to some extent. Maize *(aya)* or Indian corn, which forms a staple food practically all over Central America, is sparsely and occasionally cultivated by the Miskito. When grown the corn is stored by hanging it under a roof over a low fire and smoked in order to prevent molding. Red or black beans *(snek)* are grown to a very small extent by the Miskito. Rice has been recently introduced. The grains of rice are heavy and rounded and differ from our native wild rice or those kinds ordinarily found in the tropics. The pejibaye *(supa)* is cultivated for its edible fruit; the Central American name for this plant appears to be taken from the Arawak language of Haiti. It is not a native plant in this area, so that it is found only in cultivated state and deserted palms indicate former village sites. The coconut palm *(kaya)* is found in a semiwild state. The Indians drink the juice of the nut, eat the tender kernel, and extract the oil. Oil is obtained by skimming the top of a boiling decoction of kernels and water.

Sugar cane *(kayu)* brought by the Spaniards during the sixteenth century is grown by the Miskito. They have a mill to extract the juice but have not learned to prepare sugar from it. They drink the fresh juice of the plant or allow it to ferment; sometimes it is boiled into a brown syrup which on cooling partially hardens to form a sort of brown sugar. Cacao which is indigenous, is sometimes cultivated but the pods are usually obtained from wild trees.

The most common native fruit trees are pineapples *(pihto)*, papaws or papayas *(twas)*, avocados or alligator pears *(sikya)*, soursops (*dwarsop*), cashews (*kasan*) and plums (*poims*). The common fruit *(dwarsop)*, cashews *(kasan)* and plums *(ploms)*. The common fruit dock, grapefruit, mangoes, breadfruit, tamarind, and rose apples. A few bushes of cotton, chili peppers and annato are found near every lodge.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

252 Meat and fish are either boiled in water or roasted in hot ashes.
262 The favorite meats are red monkey and white lipped peccary. Birds eggs are eaten, even if partially rotten but the eggs of domestic fowls are seldom used. Bananas are cooked in many ways depending to a great extent on the degree of ripeness. Fish are wrapped in bajagua leaves and roasted or fried in coconut oil.

Vegetables such as cassava, sweet potatoes, tania, yaws, green bananas and plantains are either boiled in water or placed with the meat for roasting. The pith or "cabbage" or various palms are also cooked and eaten and other wild fruits are used raw when in season A sort of bread is made from time to time by grinding dry maize in a metate and adding water. The mixture is then wrapped in bijagua leaves and allowed to stand for several days during which time it ferments. It is then baked in embers.

A sort of ensilage called *bisbaya* is made by the Indians and consists chiefly of green bananas, plantains, and pejivales. These are peeled and buried in the ground, covered layer by layer with bijagua leaves and the ensilage is not uncovered until required for food. The fruit retains its whitish natural color and turns black only after exposure to air. These food supply units have been known to last for years. Bisbaya may be consumed as a beverage after being toiled with water or it may be baked in leaves as a sort or bread. The fruit of the pejivalle palm is treated in a similar manner.

252 Various species of pungent small wild peppers are used with food
263 as a seasoning. The peppers are mashed with lime juice and little salt to make a sauce which is stored in containers and used at meals to replace salt. Besides the use of peppersauce the ashes of burned palms are often used to replace salt and in fact have a high salty flavor. Vanilla is used to flavor a drink ptepared from cacao and maize.

262 The eating of earth and charcoal (geophagia) is common among women and children and the exact physiological effect is unknown. Milk from domestic cows is common and is usually consumed as it sours or converted into a cheese.

The Indians are fond of foods that have soured or spoiled a little
[273] and often allow many decoctions to ferment; distilled liquors, however, are unknown.

221 *Seasonal intake of foods.* Meat, fish, fowl, cheese and milk are con-
262 sumed daily throughout the entire year but consumption of vegetables and fruits is seasonal.

January *Aladi cati, Inupu cati:* bastard cedar flowering time. Citrus fruits in quantity, avocadoes, melons, nuts.

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

221
262

February	*Cuswa cati, islu cati:* tortoise time, iswilly lizard time. Few citrus fruits, coconuts or vegetables.
March	*Cocamuk cati:* iguana season. Few green vegetables or fruits.
April	*Willi wantca cati:* male turtle time. Coconuts, very few vegetables, few bananas.
May	*Willi Mayrhen cati:* female turtle time. More bananas, plantains and coconuts.
June	*Li cati:* rain month. Same as May.
July	*Pastara cati:* high wind time. Same as May, a few more greens, bananas.
August	*Sicla cati; wis cati:* ? Few citrus fruits, more greens, bananas.
September	*Wis cati:* wis month.
October	*Sauht cati, prarhi cati:* south wind month, hurricane time. Food consumption depends to a great extent on the weather. Wild fruits, citrus fruits.
November	*Yahibra cati:* north wind time. Citrus fruits, wild fruits.
December	*Krismas cati:* Christmas month. Fewer vegetables and fruits consumed.

During May, June and July no greens of any kind are available; this is true also during late December and January. Meat consumption remains fairly constant.

Average meat intake per day (June)	960 grams.
Other fruits and foods (June)	400 grams.

The above was the approximate daily consumption of my head boatman, Ramón. Others ate a little more or a little less, but the proportion was about the same. Apparently, members of most families consume about the equal amounts of meats and vegetables as he did. On the other hand, following a hunt, the meat consumption increases significantly and sometimes an entire animal is eaten at one sitting. Be it noted that meat is usually secured from hunting or fishing. This is somewhat striking when one observes the large numbers of turkeys among the families. It is assumed that as such these birds would be eaten frequently but instead they are consumed rarely; they are household pets. To some extent this is true of chickens. Pigs, on the other and, are more frequently eaten; they require little care and in general forage for themselves. Cowmeat, steermeat, heifer meat, etc., is obtained from the occasional slaughter of domestic cattle. The latter are plentiful.

262
231

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

262 [222] The Indians also secure honey from wild honey bees. In the Coco territory there are various species of stingless bees *(Meliponidae)*. The honey cells are circular and the honey is yellow and slightly acid in taste, it does not crystallize when kept for sometime. Previous to the introduction of sugar cane the honey was used to sweeten food.

The most important food of the Miskito Indian is the banana, even though it is not indigenous to America. As such this is one of the few examples where a food originally foreign to a people was immediately accepted an chronically utilized. On the other hand the use of cereals so common throughout the Americas, is infrequent. The reason for this is that cereals are difficult to grow in this territory. The numerous insects which attack certain types of vegetable or plant life restricts agricultural enterprise. Furthermore there appears to be no need of cereals in the diet. Beans have recently been introduced and in some communities they have been raised for eating purposes.

Oils are easily prepared from coconuts or varieties of nuts. These are crushed and placed in boiling water, and in due course the oil rises to the surface and is skimmed off.

262 177 It can be said that the Miskito Indians living as they are, unmolested, by the banks of rivers and streams secure enough wild fruits, vegetables, fish and game to adequately supply the yearly food. To this is added small agricultural projects of their own, such as banana plantations, citrus fruits, etc. When these Indians become sequestered in larger villages or are removed from their community to work for mines, rubber collection, or as laborers for fruit companies, the dietary deteriorates. To secure food under these new circumstances they need money, a substance which is easily expendable and does not represent a material which may be needed in the future. The Rubber Development Corporation has had in many instances fed laborers on foreign foods which have not always agreed with or been agreeable to workers.

NUTRITIONAL EVALUATION OF THE DIET

121 The evaluation of the nutritional status of individuals from any single examination of their diet is difficult if not impossible. There are widely divergent views regarding the needs of the body, as to the extent and character of the food requirements, of the relative merits of various foods and as to the degree and frequency of intake of the nutritional components. A survey of dietary intakes will often make one suspect a deficiency and may warn the investigator what to seek for In the end clinical appraisal is the only satisfactory method. There is

3: Pijoan D-5 (ca. 1945) 1946
SA15 Mosquito SA15

of rain and humidity have eroded, the pit fills with water and the entire construction fills with flies. The dysentery epidemics at San Carlos usually begin about these latrines and extend to the periphery of the village.

Another contributing factor to the spread of dysentery is that in some areas well meaning visitors have encouraged the use of milk for children. In a territory devoid of refrigeration or adequate sterilization the use of milk should be derived from the mother's breast or directly from the cow's udder. On the other hand milk products such as cheese are less likely to be infected. Nevertheless, milk fluid serves as an excellent bacterial medium. Powdered milk might obviate such a hazard.

Drinking water in the larger villages may be considered a source of infection since water may be stored in containers not ideally suited for such a purpose or the water may be collected from the main river or other pools simply because the source is conveniently located.

The Indian customs are such as to depress the occurrence of dysentery. These customs are to drink water from clear running creeks (see map of San Carlos), and to perform their ablutions either in the large river or to dig holes for their excremata. If holes are dug in the bush they are immediately covered up after use. The Indian, unless educated otherwise, considers the communal use of a structure such as a collecting booth for feces and urine as an evil. It would thus appear that the invading culture (Spanish American) with its convenient latrine often in juxtaposition to the latrine, has furthered the dysentery problem.

Some of the latrines observed were of such a character that even the investigators used to the inconveniences of the bush felt repelled by the utterly uninviting stench and the great scatter of soiled paper throughout the establishment. Toilet paper, in many tropical areas of high humidity, offers itself as a remarkable medium for growth of molds which renders the paper useless. Latrines built by special sanitary engineers were misused, had eroded screens and were halt filled with water. During the dry season when they were erected they were presumed to be ideal and satisfactory in every way.

If the wretched latrine is to be used, the use insecticides and disinfectants must be encouraged, otherwise dysentery will be present. The authors of this report endeavored to encourage the Indian practice of waste disposal.

Amoebic dysentery exists as far as could be determined in from 2-5 per cent of the population. Stool examinations at Waspam, revealed that 7 per cent of the adults and 2 per cent of the children had